

*Smith/Kingsley*

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**Multi-Sensor Data From A-Train Instruments Brought Together for Atmospheric Research**

The A-Train is comprised of a series of instruments, developed independently, that measure highly related atmospheric components along the same flight path. In order to intercompare data from this multitude of sensors, researchers must access, subset, visualize, analyze and correlate distributed atmosphere measurements from the various A-Train instruments. The A-Train Data Depot (ATDD) has been operational for over a year, successfully performing the aforementioned functions on behalf of researchers, thus providing co-registered data from the Cloudsat, CALIOP, AIRS, and MODIS instruments for further intercomparisons. Of late, significant data from OMI and POLDER are now included in the 'depot'. By specifying the desired spatial and temporal range, the researcher can subset, visualize, co-register, and access multi-sensor A-Train data related to: Cloud, aerosol, atmospheric temperature, and water vapor parameters (vertical profile visualizations); Cloud Pressure, cloud top temperature, water vapor, cloud optical thickness, and aerosol products (horizontal strips subsetted +/- 100km from the profile visualizations), and; Cloud pressure parameters (2-D line plots overlayed on the vertical profiles). All data is plotted using the GIOVANNI data exploration tool. A new feature of GIOVANNI is its ability to have collocated and subsetted data sets as well as PNG image files downloaded to the researcher's computing facility. By providing a convenient way to visualize and acquire multi-sensor data, ATDD affords users more time and effort to further their research.

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# Multi-Sensor Data From A-Train Instruments Brought Together for Atmospheric Research

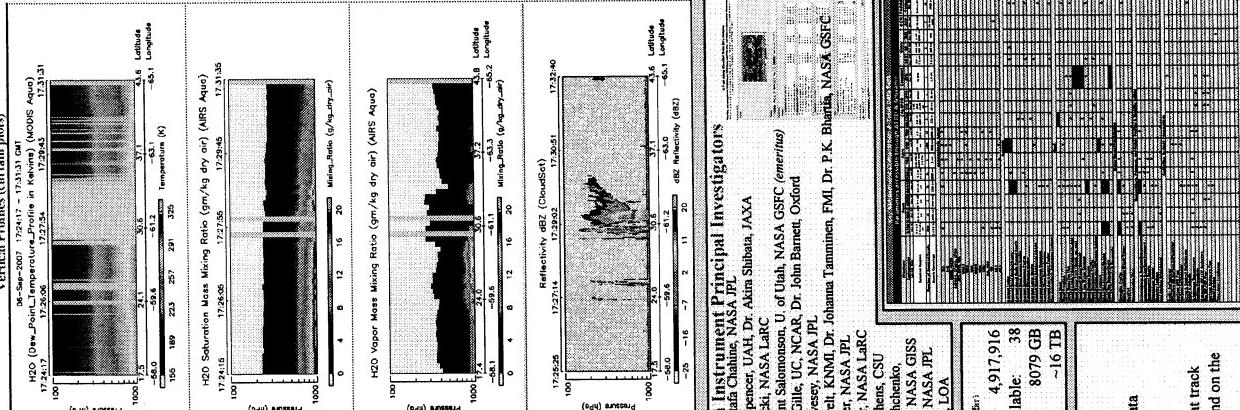
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Based on the NASA-funded ACCESS Project: A-Train Data Depot: Integrating Atmospheric Measurements Along the A-Train Tracks Utilizing Data from the Aqua, CloudSat, and CALIPSO Missions

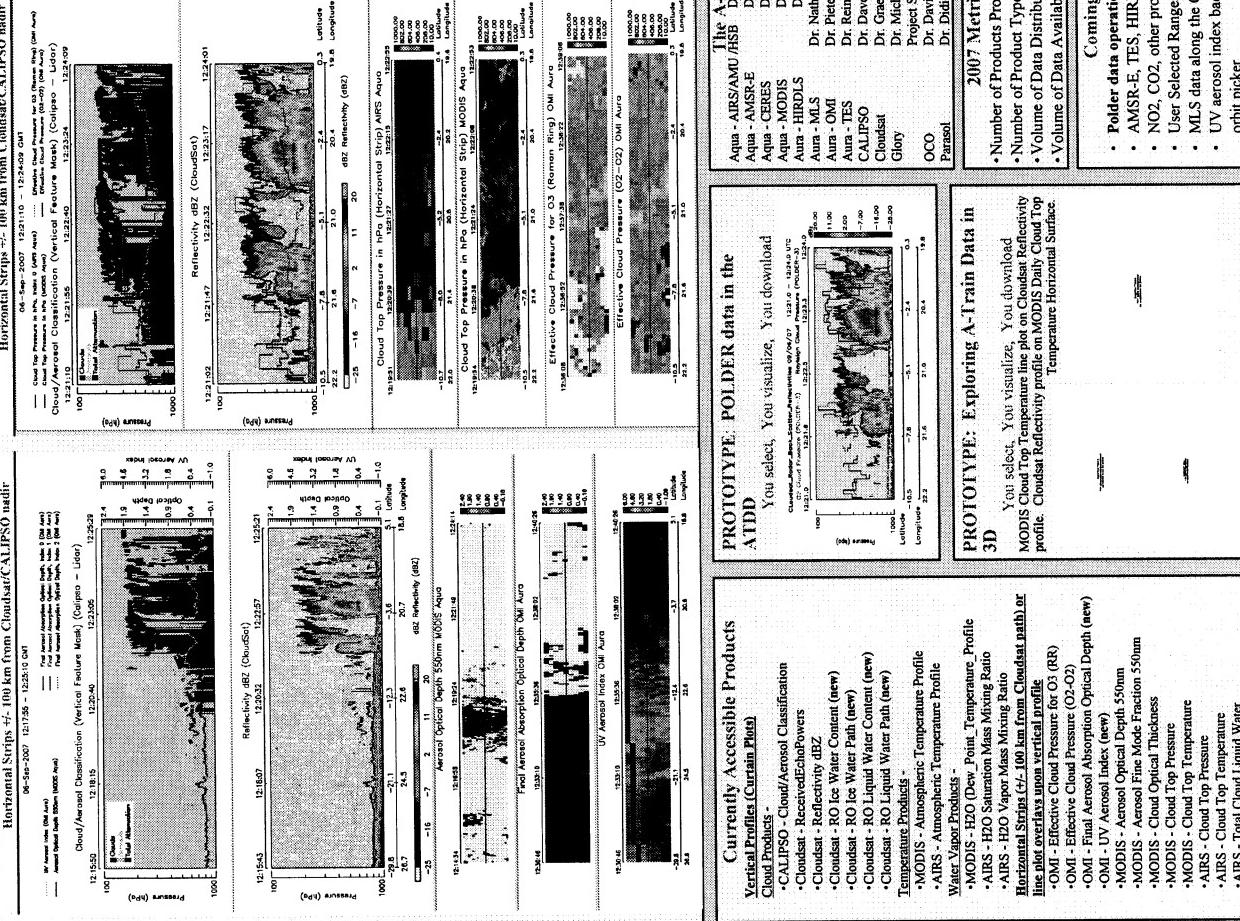
## Studying Water Vapor Profiles...

Vertical Profiles, curtain plots)



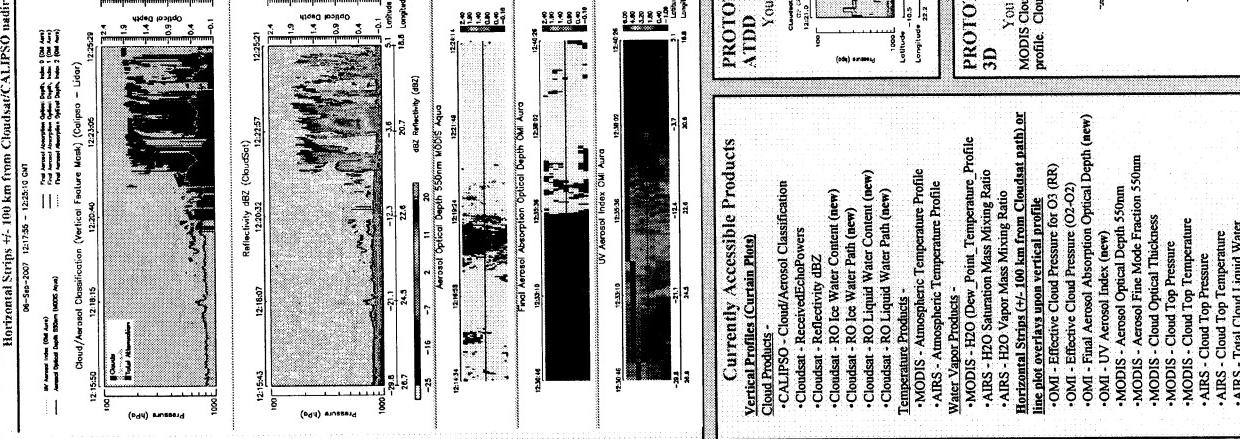
## Studying Clouds...

Vertical Profiles (curtain plots) &



## Studying Aerosols...

Vertical Profiles (curtain plots) &



## Abstract

The A-Train is comprised of a series of instruments, developed independently, that measure highly related atmospheric components along the same flight path. In order to inter-compare data from this multitude of sensors, researchers must access, subset, visualize, analyze, and correlate distributed atmosphere measurements from the various A-Train instruments.

Sensors: Cloudsat, CALIPSO, AIRS, OMI, MLS, and MODIS

Areas of Study: Cloud, aerosol, atmospheric temperature, and water vapor parameters, stratospheric composition

Services: Dynamically subset, visualize, co-register, and access multi-sensor A-Train data

Saves researchers great amounts of time by using ATDD services.

Output: HDF, PNG, KMZ (prototype)

## What can the A-Train Data Depot Do For You

The A-Train Data Depot (ATDD) has been operational for more than a year: <http://atdd.gsfc.nasa.gov/atdd/>

- Provides access to A-Train datasets from one portal
- Provides user friendly, data visualization and exploration for science data discovery
- Perform much of the work each individual researcher would be spending valuable resources on:

  - Creates user specified subsets of just the information nearest the A-Train path.
  - Thus, no need to download and subset large volumes of data.
  - Accesses remote heterogeneous datasets for convenient download.
  - Co-registers datasets of different formats, resolutions, scales onto common grids.
  - Dynamically performs functions on specific user requested data of interest.
  - Provide a virtual data portal/center that processes, archives, provides access, visualizes, analyzes and correlates distributed atmosphere measurements from various A-Train instruments along A-Train tracks.

## LATEST NEWS:

Aura to move closer to other A-Train platforms: Better Science, MLS will coincide with Cloudsat and CALIPSO globally, not just at the poles. (See <http://go.usa.gov/3XWzU> for full story and science benefits)

Source: <http://go.usa.gov/3XWzU>, June 24, 2007

MLS Radiance, Scientific version

Cloud Products -

-CALIPSO - Cloud/Aerosol Classification

-Cloudsat - Reflectivity,dBZ

-Cloudsat - RO Ice Water Path (new)

-Cloudsat - RO Liquid Water Content (new)

-Cloudsat - RO Liquid Water Path (new)

-MODIS - Atmospheric Temperature Profile

-Water Vapor Products -

-MODIS - H2O Dew Point, Temperature Profile

-AIRS - H2O Saturation Mass Mixing Ratio

-AIRS - H2O Vapor Mass Mixing Ratio

Horizontal Strips +/- 100 km from Cloudsat/CALIPSO nadir

06-Sep-2007 122.1055 - 122.1059 GAN

Cloud/Aerosol Classification (Vertical Feature Mask) (Cloudsat - Lidar)

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Cloud Top Pressure in hPa (Cloudsat - Lidar)

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Cloud Top Reflectivity (dBZ) (Cloudsat - Lidar)

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Cloud Top Pressure in hPa (Horizontal Strip, Auras) (Aqua)

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Cloud Top Reflectivity (dBZ) (Horizontal Strip, Auras) (Aqua)

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Effective Cloud Pressure (62°-92°) (Cloudsat - Lidar)

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